To: Arguto, William[Arguto.William@epa.gov]; Wisniewski, Patti-Kay[Wisniewski.Patti-Kay@epa.gov]
From: binetti, victoria
Sent: Thur 2/27/2014 2:44:05 PM
Subject: FW: Fwd: MCHM fate and biotransformation proposal
Holding Time Test.xlsx

This is what I was referring to. Sorry, I didn't realize you weren't cc'd.--Vicky

From: Caporale, Cynthia
Sent: Wednesday, February 26, 2014 10:45 AM
To: binetti, victoria
Cc: Molnar, Adam
Subject: FW: Fwd: MCHM fate and biotransformation proposal

Vicky,

Back when we were working with the other labs determining the appropriate method/procedures to analyze for PPH at low detection limits, an issue was raised concerning holding time of extracts. A laboratory was going back to the hexane extracts from samples that were collected during the DNU timeframe and re-analyzing to determine PPH concentration. Since holding times were unknown for MCHM and PPH a concern was raised as to whether the PPH would still be present at that later analysis time. To test the holding time, Adam Molnar conducted an informal study and below are the preliminary results. These results are not going to part of our regular reports that we are submitting for the tank material and site samples but could be provided in a more formal presentation. Please let me know if this information would be beneficial. If it is, I'm also going to have the study continue out to the 28 day HT since I think some of the extracts were re-analyzed past 14 days.

Cindy

From: Molnar, Adam
Sent: Monday, February 24, 2014 4:05 PM
To: Caporale, Cynthia; Gundersen, Jennifer; Warner, Sue
Subject: RE: Fwd: MCHM fate and biotransformation proposal

Holding time study

I extracted 12 samples at various concentrations (20ppb/10ppb/5ppb in the aqueous sample which would calculate to 1000/500/250 ppb in the extract) and a blank. 8 samples are at concentrations high enough to see on the GC-FID.

I ran an analysis on 2/11, 2/18, and 2/24 (today). I've worked up the 2/11 and 2/18 data and there is no significant drop in concentration for PPH over those 7 days. There are small differences in the concentration of PPH <10% either higher or lower. I can take a look at the 2/24 data tomorrow morning for a 14 day trend and report the results in the morning. For a full 28 day holding time test we would need to wait until 3/11.

I'm not seeing an MCHM degradation on the order of days. These results were produced by extracting 50 mL of MilliQ water spiked with MCHM and PPH in methanol with 2 mL Hexane after the addition of NaCl. The extracts were then analyzed on a dual column GC-FID. I did run these extracts on two different columns but I decided to only report the result from the column with superior chromatography which is an Rtx-1701. I have data from the other column as well but there are interfering peaks and less sensitivity on that column which is a Restek Stabilwax. The Stabilwax data is good but not as good.

Let me know if you want me to continue this test after 2/24 and let me know if you want the Stabilwax column results. Otherwise I was going to stop running on that column.

I attached a spreadsheet with the results.

Adam Molnar

Chemist

U.S. EPA Region 3

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molnar.adam@epa.gov

From: Caporale, Cynthia
Sent: Monday, February 24, 2014 2:23 PM
To: Gundersen, Jennifer; Warner, Sue; Molnar, Adam
Subject: FW: Fwd: MCHM fate and biotransformation proposal

Please review and let me know if you have comments. Also, not sure where we are with a HT study in hexane?? Any ideas the HT in the samples we received?

From: Hedrick, Elizabeth
Sent: Monday, February 24, 2014 2:07 PM
To: Caporale, Cynthia
Subject: FW: Fwd: MCHM fate and biotransformation proposal

I am passing this along as the proposal mentions the carboxylic acid (CA) of MCHM. It appears that other chemists are thinking along the same line. The proposal's authors do not have GC-MS (just FID) which I think might be a hindrance to elucidating structures. If you have lab folks still working on this it might be worth looking for the CA and developing a method for it (you can purchase the CA). The pKa will be much lower than for MCHM which could be used to optimize its extraction.

I have accumulated some articles on napthenic acids. If you are interested, I can share them with you.

And lastly, GCWW has informally shared with us the fact that they are observing degradation of MCHM on the order of days. I don't have any more details on how they held the samples but if you are interested we could put you in touch with them.

Thanks,

Elizabeth

Water Security Division

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

26 West Martin Luther King Drive

MS 140

Cincinnati, Ohio 45268

Ph (513) 569-7296

Fax (513) 569-7191

From: Allgeier, Steve
Sent: Monday, February 24, 2014 11:43 AM
To: Lindquist, Alan; Magnuson, Matthew; Hedrick, Elizabeth
Subject: FW: Fwd: MCHM fate and biotransformation proposal

Just FYI

From: Arguto, William
Sent: Monday, February 24, 2014 10:14 AM
To: Allgeier, Steve
Cc: binetti, victoria; Wisniewski, Patti-Kay
Subject: FW: Fwd: MCHM fate and biotransformation proposal

Steve – an FYI on USGS research

Bill

From: Kelly, Jack (R3 Phila.)
Sent: Monday, February 24, 2014 9:46 AM
To: Arguto, William; Wisniewski, Patti-Kay; binetti, victoria; Werner, Lora; Markiewicz, Karl; Helverson, Robert; Burns, Francis; Singhvi, Raj; Caporale, Cynthia
Cc: Linden, melissa; Matlock, Dennis; Smith, Art; Gilbert, John
Subject: Fw: Fwd: MCHM fate and biotransformation proposal

I can't review now just passing on for later discussion.

From: Matlock, Dennis
Sent: Monday, February 24, 2014 9:39:52 AM
To: Kelly, Jack (R3 Phila.)
Subject: Fw: Fwd: MCHM fate and biotransformation proposal

Jack fyi
Pass along as you like.
Thx
dennis

From: Dorsey, Mike H <Mike.H.Dorsey@wv.gov>
Sent: Monday, February 24, 2014 8:57:28 AM
To: Rusty; Matlock, Dennis
Subject: Fwd: MCHM fate and biotransformation proposal

FYI.

Sent from my iPhone

Begin forwarded message:

> **From:** "Campbell, Patrick V" <Patrick.V.Campbell@wv.gov>
> **Date:** February 24, 2014 at 8:55:52 AM EST
> **To:** "Dorsey, Mike H" <Mike.H.Dorsey@wv.gov>, "Hickman, Joseph M" <Joseph.M.Hickman@wv.gov>

Cc: "Mandirola, Scott G" <Scott.G.Mandirola@wv.gov>
Subject: FW: MCHM fate and biotransformation proposal

Mike/Joe – looks like the USGS science guys have been doing some heavy thinking on mchm degradation. I've asked them for info on price and how qwik we could get some preliminary answers.

I'd be interested to know if this piques y'alls interest, or if you believe it is more of Freedom's problem.

One end product may be identification of bugs that like to eat mchm, or mchm-petroleum mixes. In the other places they've come up with a hungry bug mix, then had contractors deploy them as part of the cleanup.

From: Chambers, Douglas [mailto:dbchambe@usgs.gov]
Sent: Thursday, February 20, 2014 2:07 PM
To: Campbell, Patrick V; Wirts, John C
Subject: MCHM fate and biotransformation proposal

Pat, John,

When I was working in the Baltimore office over the past few years I became acquainted with the researchers on the Fate and Bioremediation Team there. These folks have been working on tracking the environmental fate and degradation of compounds at locations such as Aberdeen Proving Grounds and White Sands Missile Range. I spoke to them about the MCHM spill, just to get their take on the situation. After some thought they came up with the following. I felt it was worth passing along to you.

--
Douglas B. Chambers

Biologist/Water-Quality Specialist

USGS West Virginia Water Science Center

304 347-5130 ext 231

Mobile 304 590-1276